

### Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <a href="http://about.jstor.org/participate-jstor/individuals/early-journal-content">http://about.jstor.org/participate-jstor/individuals/early-journal-content</a>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

# THE JOHNS HOPKINS PRESS

#### BALTIMORE

#### AMERICAN JOURNAL OF MATHEMATICS.

FRANK MORLEY, Editor. Quarterly. 4to. Volume XXXV in progress. \$5 per volume (foreign postage 50 cents).

#### AMERICAN CHEMICAL JOURNAL.

IRA REMSEN, Editor. Monthly. 8vo. Volume L in progress. \$5 per year (foreign postage 50 cents).

#### AMERICAN JOURNAL OF PHILOLOGY.

B. L. Gildersleeve, Editor. Quarterly. 8vo. Volume XXXIV in progress. \$3 per volume (foreign postage 50 cents).

## JOHNS HOPKINS UNIVERSITY STUDIES IN HISTORICAL AND POLITICAL SCIENCE.

8vo. Volume XXXI in progress. \$3 per volume.

# JOHNS HOPKINS UNIVERSITY CIRCULAR, including the President's Report, Annual Register, and Medical Department Catalogue.

Monthly. 8vo. \$1 per year.

#### JOHNS HOPKINS HOSPITAL REPORTS.

8vo. Volume XVII in progress. \$5 per volume (foreign postage 50 cents).

#### JOHNS HOPKINS HOSPITAL BULLETIN.

Monthly. 4to. Volume XXIV in progress. \$2 per year (foreign postage 50 cents).

#### HESPERIA: Schriften zur germanischen Philologie.

HERMANN COLLITZ, Editor.

### BEITRÄGE ZUR ASSYRIOLOGIE, ETC.

PAUL HAUPT AND FRIEDRICH DELITZSCH, Editors. 8vo. Volume X in progress.

#### MEMOIRS FROM THE BIOLOGICAL LABORATORY.

Five volumes have been issued.

#### MODERN LANGUAGE NOTES.

Edited by E. C. Armstrong, J. W. Bright, H. Collitz, and C. C. Marden (managing editor). 4to. Volume XXVIII in progress. \$2 per volume (foreign postage 25 cents).

#### AMERICAN JOURNAL OF INSANITY.

Board of Editors. Quarterly. 8vo. Volume LXX in progress. \$5 per volume (foreign postage 50 cents).

### REPRINT OF ECONOMIC TRACTS.

J. H. Hollander, Editor. Third series in progress. \$2.00.

#### TERRESTRIAL MAGNETISM AND ATMOSPHERIC ELECTRICITY.

L. A. BAUER, Editor. Quarterly. 8vo. Volume XVIII in progress. \$3 per volume (foreign postage 25 cents).

#### REPORTS OF MARYLAND GEOLOGICAL SURVEY.

WILLIAM B. CLARK, Editor.

Subscriptions and remittances should be sent to The Johns Hopkins Press, Baltimore, Maryland.

## CONTENTS.

	PAGE
On the Four-dimensional Angles of the Semiregular Polytopes of $S_4$ . By P. H. Schoute,	357
A Generalization of Volterra's Derivative of a Function of a Curve. By Charles Albert Fischer,	369
On Differential Invariants. By James Byrnie Shaw,	
Some Properties of Closed Convex Curves in a Plane. By Arnold Emch,	407
Finiteness of the Odd Perfect and Primitive Abundant Numbers with n Distinct Prime Factors. By Leonard Eugene Dickson,	413
Even Abundant Numbers. By L. E. Dickson,	423
The Identical Relations between the Elements of any Oblique Triple System of Surfaces. By Henry D. Thompson,	427
Transformations and Invariants Connected with Linear Homogeneous Difference Equations and Other Functional Equations. By Cora B.	104
Hennel,	431
Projective Differential Geometry of Rational Cubic Curves, By Joseph A. Nyberg,	<b>45</b> 3
The American Journal of Mathematics will appear four times yearly.  The subscription price of the Journal is \$5.00 a volume (foreign postage, 50 cer	 nts);
single numbers, \$1.50. A few complete sets of the Journal remain on sale.	

It is requested that all editorial communications be addressed to the Editor of the American Journal of Mathematics, and all business or financial communications to

The Johns Hopkins Press, Baltimore, Md., U. S. A.